

Practitioner's Docket N . SST/1032



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Bugbee, Michael W.; Crawford, Mark G.; and Commins, Alfred D.

Application No.: 09/692,674

Group No.: 3635

Filed: 10/18/2000

Examiner: Safavi, Michael

For: Screw Fastener in Multi-Ply Wood Structure Shear Connection

Box ISSUE FEE
Commissioner for Patents
Washington, D.C. 20231

LETTER ACCOMPANYING AMENDMENT AFTER ALLOWANCE
(37 C.F.R. SECTION 1.312)

1. Please make the amendments shown in the attached papers in this application in the abstract and specification.
2. Type of amendment:
Correction of formal matters

As shown in the remarks of the attached paper, this require no substantial amount of additional work on the part of the PTO.
3. The issue fee has not been paid.

Date: JAN 14, 2002

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Pat nt Applicati n Serial no. 09/692,674

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SST/1032

1 CERTIFICATE OF MAILING Under 37 CFR 1.8(a)
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on January 14, 2002
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Applicants: ALFRED D. COMMINS, MICHAEL W. BUGBEE
10 MARK G. CRAWFORD
Title: SCREW FASTENER IN MULTI-PLY WOOD
STRUCTURE SHEAR CONNECTION
Serial No.: 09/692,674
Filed: October 18, 2000
15 Group Art Unit: 3635
Examiner: SAFAVI, MICHAEL, PRIMARY EXAMINER
ART UNIT 3635
Docket No.: SST/1032

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Washington, D.C. 20231

25 **Amendment after allowance , 37 CFR 1.312(a)**
(before payment of issue fee)

This is in response to Examiner Michael Safavi's communication mailed
12/14/2001 including Notice of Allowability and Examiner's Amendment.

Applicants have reviewed the foregoing documents and wish to thank
30 the Examiner for the Notice of Allowability and to inform Examiner Safavi
that they are in agreement with the changes agreed to and incorporated in
Examiner Safavi's Amendment.

Applicants request that the following additional Amendments made
prior to payment of the issue fee be considered and entered.

35

1 1. In the specification on page 10 at line 31 after the words "loads, additional", the word "trusses" should be changed to ---trusses---. This is an obvious clerical error and should be changed.

2. In the specification on page 11, line 35 should be deleted and the following sentence substituted. "Truss lateral bracing should normally be connected to each truss ply." This request is to reflect good engineering practice. This change has no effect on the claims. Lateral bracing is simply not mentioned or a part of the claims.

3. In the specification, at page 4, line 16, the first occurrence of element 14 was referred to as "knurled section 14".

Through inadvertence, all later occurrences of element 14 were incorrectly referred to as "knurled means 14". Applicants wish to correct this inadvertent mistake and change all occurrences of "knurled section", "knurled means" and "knurled means 14 to ---knurled portion---, or ---knurled portion 14---.

The element "knurled portion" correctly occurs in all of the original claims either by positive listing, or by dependence on a previous claim and was never changed during prosecution.

Applicants believe that none of the above three changes add new matter, but simply correct obvious mistakes in the original application.

If the Examiner accepts the above three corrections, Applicants request that the following instructions be followed to comply with 37 C.F.R. §1.121(b)(1)(i) and (ii).

Marked-up Form In the Specification

25 (1) Please amend the paragraphs on page 4 of the Specification, beginning at line 4 and ending on line 20 as follows:

FIG. 2 is an enlarged scale, partial central sectional view of the fastener shown in FIG. 1 in operative association with a portion of a wood structural member and a portion of a sheet metal member. Portions of the wood screw have been cut to indicate portions of the axial length of the wood screw have been removed so that the wood screw may meet the drawing paper restrictions. The upper portion of the wood screw is only partially in cross section to clarify the details of the invention. In this view, the pointed end portion 7 and substantially all of the threaded shank portion 8 has moved through the opening in the sheet metal member 5 and entered

1 the wood structural member 2. The knurled [section] portion 14 has not yet entered the bore opening 3.

FIG. 3 is partial central sectional view of the wood screw shown in FIGS. 1 and 2 in which the knurled portion 14 has just passed through the opening in the sheet metal member 5 and has entered the wood structural member 2. A portion of the knurled [means] portion 14 has been removed to show how the portions between the knurls fill up with mashed wood fibers from the wood structural member.

(2) Please amend the paragraph on page 6 of the Specification, beginning at line 8 and ending on line 36 as follows:

Referring now in detail to the wood screw 1 of the present invention as most clearly shown in FIGS. 1 and 2, the screw 1 includes; a shank 6 having an overall length 44 ; a pointed end portion 7 formed on an entering extremity of the shank 6; the shank 6 having a threaded shank portion 8 having thread convolutions 9 with an outer diameter 10 greater than the diameter of the first bore 3 and beginning at a first point 11 adjacent the pointed end portion 7 and extending axially along the periphery of the shank 6 to a second point 12 and adapted to form and engage threads 13 in the wood structural member 2; knurled [means] portion 14 formed in a portion of the shank 6 having a first point 15 adjacent the second point 12 of the threaded shank portion 8 and extending axially along the shank 6 to a second point 16 and having an outside diameter 17 generally equal to the outer diameter 10 of the thread convolutions 9 in the threaded shank portion 8 and having an inside diameter 18 (see FIG. 4) less than the outside diameter 17 of the knurled [means] portion 14; the shank 6 having an unthreaded shank portion 19 having a diameter 20 generally equal to the outside diameter 17 of the knurled [means] portion 14 and having a first point 21 adjacent the second point 16 of the knurled [means] portion 14 and extending axially along the shank 6 and terminating at a second point 22; the knurled [means] portion 14 being adapted for mashing over and radially outwardly without severing a substantial proportion of the wood fibers of the inner portions 23 of the threads 13 formed in the wood structural member 2 forming an annular zone 55 of mashed and severed, as well as unsevered wood fibers having an outer diameter 56 greater than the diameter 20 of the unthreaded shank portion 19 and forming a tight fit between the unthreaded

1 shank portion 19 and the annular zone 55 of mashed and severed, as well as unsevered, wood fibers of the wood structural member 2; and a head 26 integrally connected to the shank 6 adjacent the second point 22 of the unthreaded shank portion 19.

5 (3) Please amend the paragraphs of the Specification on page 7, beginning at line 21 and ending on line 28 as follows:

Referring to FIG. 3, knurled [means] portion 14 may be double knurled in a cross hatched pattern or have single straight knurls formed at an angle to the axis of the screw. It has been found, however, that straight
10 knurls 30 (see FIG. 2) having a dull edge 47 and valleys 48 between the dull edges 47 perform satisfactorily.

It has also been found that where the axial length 31 (see FIG. 1) of the knurled [means] portion 14 is substantially less than the axial length 32 of the unthreaded shank portion 19 satisfactory results are obtained.

15 (4) Please amend the paragraphs of the Specification on page 8, beginning at line 25 and ending on page 9, line 19 as follows:

Referring to FIG. 3, as the tapered entering portion 54 (see FIG. 3) of knurled [means] portion 14 of wood screw 1 reaches outer face 53 of wood structural member 2, the dull edges 47 of each knurl 30 engage inner
20 portions 23 of threads 13. It is preferable to taper the entering portions 54 of the knurled [means] portion 14 as shown in the drawings to lessen the shock as the knurls 30 strike the inner portions 23 of threads 13. Referring to FIG. 2, tapered entering portion 54 is bounded by lower bevel end 60 and upper bevel end 59. This is especially important since as previously stated
25 edges 47 of the knurls 30 are dull and thus there is a greater resistance encountered by the wood screw 1 as it proceeds through the wood structural member 2.

The function of the dull edges 47 of knurls 30 is to bend the inner portions 23 of threads 13 in the structural wood member so as to mash
30 rather than to sever a substantial portion of the wood fibers of the structural wood member. These bent over and mashed wood fibers as well as the severed wood fibers are illustrated in FIGS. 3 and 4 and are indicated generally by the number 55 which represents an annular zone of mashed and severed, as well as unsevered, wood fibers. The annular zone of mashed
35 wood fibers 55, as seen when wood screw 1 is fully seated, is bounded by

1 the spaced outer diameter 20 of unthreaded shank portion 19 and
 outer diameter 56 of the mashed fiber annular zone. Annular zone of
 mashed wood fibers 55 as seen in FIG. 4 extends from outer face 53 of
 wood structural member 2 to penetration point 61 (see FIG. 4) of upper
 5 bevel end 59 of knurled [means] portion 14 (see FIG. 2).

As the knurled [means] portion 14 proceeds into the wood structural
 member 2, the valleys 48 between the dull edge ridges 47 of knurls 30 fill
 with the unsevered fiber ends as well as severed wood fibers of the mashed
 over inner portions 23 of threads 13 and loose cuttings from the cutting
 10 edge 29 on the pointed end portion 7 of the wood screw 1. This filling of
 the valleys 48 in the knurls 30 further reduces the cutting or severing of the
 wood fibers as the knurl [means] portion 14 continues through the wood
 structural member 2.

(5) Please amend the paragraph of the Specification on page 9,
 15 beginning at line 35 and ending on page 10, line 3 as follows:

By sizing the knurled [means] portion 14 with an outside diameter 17
 generally equal to the outer diameter 10 of the thread convolutions 9 in the
 threaded shank portion 8 and generally equal to the diameter 20 of the
 unthreaded shank portion 19, wood splitting as the unthreaded shank portion
 20 enters the wood structural member 2 is obviated.

(6) Please amend the paragraph of the Specification on page 10,
 beginning at line 12 and ending on line 22 as follows:

Some typical dimensions of wood screws of the present invention
 having an overall shank length 44 measured from the underside 50 of washer
 25 35 to the point 51 ranging from 1 1/2" to 3 1/2" are as follows: The length
 33 of the threaded section 8 may vary from 7/8" to 3 1/4" while the axial
 length 31 of the knurled [section] portion 14 remains at a constant .250".
 and the length 32 of the unthreaded shank portion 19 varies with the length
 of the wood screw 1. For example, where the shank length is 1 1/2", the
 30 unthreaded shank portion 19 may be 5/8" whereas an overall shank length
 44 of 3 1/2" may have an unthreaded shank length 19 of 1 1/4". Outer
 diameter 10 of thread convolutions 9 may have a diameter of 0.259 - 0.250"
 and an inner diameter of 0.187" to 0.183".

(7) Please amend the paragraph of the Specification on page 10,
 35 beginning at line 29 and ending on line 34 as follows:

- 1 Referring to FIGS. 7, 8, and 9, a truss 70 is illustrated having top chords 71 and 72, web members 76 and a bottom chord 73. To share loads, additional [trusts] trusses may be placed side by side and at least one of the chords of each adjacent truss should be wood and joined by screws 1.
- 5 As illustrated, all of the chords 71 - 73 are wood and all of the multi-ply chords 71- 73 are joined by screws 1.

(8) Please amend the paragraph of the Specification on page 11, beginning at line 35 and ending on line 35 as follows:

[All plies of the truss lateral bracing should normally be connected.]

- 10 Truss lateral bracing should normally be connected to each truss ply.

Marked-up Form in the Abstract of the Disclosure

(1) Please amend the paragraph of the Abstract of The Disclosure on page 19, beginning at line 1 and ending on line 11 as follows:

15 **ABSTRACT OF THE DISCLOSURE**

- A wood screw for joining multi-ply wood structures in a shear connection such as roof trusses and multiple plies of structural composite or sawn lumber holding a wood structural member to another member such as a sheet metal member a heavy metal member or another wood member
- 20 wherein the screw includes a shank having a threaded portion and an unthreaded portion. A knurled [means] portion is provided on the shank between the threaded and the unthreaded portion for forming an annular zone of mashed and severed, as well as unsevered, wood fibers for preventing wood splitting and laterally holding the screw to the wood
- 25 structural members in a tight fit.

Clean-Form in the Specification:

(1) Please replace the paragraphs on page 4 of the Specification, beginning at line 4 and ending on line 20 as follows:

- 30 FIG. 2 is an enlarged scale, partial central sectional view of the fastener shown in FIG. 1 in operative association with a portion of a wood structural member and a portion of a sheet metal member. Portions of the wood screw have been cut to indicate portions of the axial length of the wood screw have been removed so that the wood screw may meet the
- 35 drawing paper restrictions. The upper portion of the wood screw is only